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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,786

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EXAMINER

WANG, CHUN CHENG

ART UNIT

PAPER NUMBER

4171

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,786	Applicant(s) ASAOKA ET AL.	
	Examiner CHUN-CHENG WANG	Art Unit 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01/25/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/25/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02. The oath or declaration is defective because: The Oath or Declaration is not dated by inventors. It was not executed in accordance with either 37 CFR 1.66 or 1.68.

Specification

The title in the Specification is objected to because the title is not the same title of the invention set forth in application. Correction is required.

The 4 patent literatures in page 2 are listed without the origin of the country. Correction is required.

The chemical formula of ammonium chloride in page 7 line 3 is incorrect. Correction is required.

The chemical formula of calcium carbonate (CaCO_2) in page 8 line is incorrect. Correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term ammonium chloride in the claim is not clear due to the mismatch of chemical name with formula in the Description page 7.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Yasuhiro et al. (JP2001-104711).

The applicants claim a flocculant made from a silicon colloidal solution for gelation through dilution and flocculating suspended matter in conjunction with the gelation.

Yasuhiro et al. disclose an inorganic flocculant comprises silica and calcium hydroxide, aluminum and iron, which has a high flocculating performance....used in an admixture with water (Abstract). And the flocculating agent is applicable to treat slurry consists of suspension particles (Detailed Description [0007]).

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Poncelet et al. (US5,888,711). Poncelet et al. discloses an inorganic material is synthesized by reacting soluble silica or a soluble silicate compound with an aluminum compound to form a soluble hydroxyaluminum silicate complex in an aqueous solution at a pH of 3.2 to 5.5; and digesting at a pH of 3.1 to 5.0 soluble hydroxyaluminum complexes freshly formed, thereby forming a colloidal dispersion of the inorganic material. When the product is not isolated from its colloidal solution, it may be used as a flocculant (column 1 lines 15-26).

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsutomu et al. (JP3157107).

Regarding claims 1 and 2: Tsutomu et al discloses the use of acid soluble silica, alumina and calcium (oxide), obtained from slag (heat treated), dissolved in reducing acid or neutral acid to obtain a silica-alumina-calcium solution, which is used as the essential component of the flocculant, the flocculant is polymerized and gelled in weak alkaline water. Fine particles of protein, fat, suspended matter are absorbed and then separated from the water (Abstract).

Regarding claim 3: applicants claim the alkaline substance in claim 2 is calcium carbonate or lime (CaO), while Tsutomu et al discloses the use of acid soluble silica, alumina and calcium (oxide), obtained from slag, as starting material.

Regarding claim 4: applicants claim the acid solvent is diluted hydrochloride acid, while Tsutomu et al discloses the use of HCl and H₂SO₄ (Table 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutomu et al. (JP3157107).

Regarding claim 5: the applicants claim the acid solvent contains one, two, or more gelation suppressant selected from one or more from acetic acid, ammonium acetate, and ammonium chloride group, while Tsutomu et al. teaches the silica-based flocculant can be preserved for a long period by holding its pH at about 2.5-3.5 or decreasing the CaO concentration in the liquid (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the applicants' invention to use pH buffer reagents, i.e. acetic acid, ammonium acetate, and ammonium chloride, to maintain the solution pH and suppress gelation in order to prolong the shelf life.

Regarding claim 6: the applicants claim the silicon-containing substance in the flocculant according to claim 5 contains iron or aluminum, while Tsutomu et al. discloses the use of alumina in the raw material (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the applicants' invention to incorporate iron in the silicon-containing substance as starting material.

Regarding claim 7: the applicants claim the pH value for the flocculant solution is 2 to 3, while Tsutomu et al. discloses to preserve the flocculant for a long period by holding its pH at about 2.5-3.5 (Abstract). That is well overlapped with instant claim.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutomu et al. (JP3157107) in view of Poncelet et al. (US 5,888,711).

Poncelet et al. teach to use hydrochloride acid, acetic acid (column 5 lines 34-35) and ammonia solution (column 6 line 26). It would have been obvious to one of ordinary skill in the art at the time of the applicants' invention to combine the teachings from Tsutomu et al. pH at about 2.5-3.5, and Poncelet et al.

Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutomu et al., JP3157107, in view of Poncelet et al., US5888711.

Claims 8-11 are the manufacturing method for the flocculant claimed is the material, reaction condition and sequence, which was cited through instant claims 1-7 and were rejected as previously discussed. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the

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claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983)

Regarding claims 12 and 13: applicants claim a filtering means is added for filtering said silicon colloidal solution to remove undissolved suspended matter (claim 12) Poncelet et al. discloses the residual ions can be eliminated by dialysis or by ultra-filtration (Column 4 lines 28 and 29). And the applicants claim gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) was added in the silicon colloidal solution to the silicon colloidal solution to cause undissolved suspended matter to aggregate (claim 13) in order for easy filtering, while Tsutomu et al. use sulfuric acid (H_2SO_4) to dissolve the silicon-containing substance, which could react with calcium to form CaSO_4 and cause the aggregation. It would have been obvious to one of ordinary skilled in the art at the time of the applicants' invention to use gypsum to aid filtering.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutomu et al., JP3157107, in view of Hasegawa et al., US4923629.

The applicants claim a pH adjustment means by adding iron or aluminum to the silicon colloidal solution to adjust the pH value, Tsutomu et al. disclose use of alumina as one of the flocculant components (abstract). However, it fail to teach the addition of iron or aluminum to the silicon colloidal solution to adjust the pH value.

Hasegawa et al. disclose flocculant may be a silicic acid solution of which the gel time is prolonged by being added with a substance capable to generate ferric ion in the solution so that the flocculant can maintain high aggregation ability after being stored for

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a long time and a water-soluble salt of a metal capable of forming a hydroxide in water such as aluminum are added to the water to be treated (abstract), a solution of ferric chloride offers several aggregation advantages, such as formation of larger flocs and efficient co precipitation with various kinds of heavy metals (column 1 lines 29-32) and polymerized aluminum chloride can be used in place of aluminum sulfate because of its ability to achieve adequate aggregation even at low temperature and form flocs relatively rapid (column 1 lines 38-42). The iron and aluminum added in the instant application could react with hydrochloride acid ($\text{Fe} + 2\text{HCl} \rightarrow \text{FeCl}_2 + \text{H}_2$ and $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2\text{O}$) forming hydrogen gas then raise solution pH value. It would have been obvious to one of ordinary skilled in the art at the time of the applicants' invention to apply the well known chemical reactions and use it in the flocculant solution to take advantage of the ability of the metal salts to form flocs.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalinske et al., US2650193. The applicants claim: mixing the flocculant with a suspension to flocculate suspended matter (claim 15) and mixing an alkaline substance in a suspension (claim 15). Kalinske et al. disclose use of small amount of lime (calcium oxide) for pH adjustment (column 2 line 55). Although Kalinske et al. does not teach the use of calcium oxide as a treatment for suspended matters but besides that calcium oxide is a common weak alkaline substance used in water and sewage treatment, to soften, as a flocculant, and to remove phosphate and other suspended impurities.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Cheng Wang whose telephone number is (571)270-5459. The examiner can normally be reached on Monday to Friday w/alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chun-Cheng Wang/
Examiner, Art Unit 4171

/Ling-Siu Choi/
Primary Examiner, Art Unit 1796